

ABSTRACT OF THE INVENTION

A white cold light source uses an LED or a gas discharge lamp and a luminescent rare earth doped glass comprising multiple rare earth cations and a particularly high total rare earth content to generate white light emission. Preferably, the luminescent glass has a 2700K to 7000K black body temperature and color rendering index value exceeding 80. A first embodiment of the glass is composed primarily of P_2O_5 , Al_2O_3 , and alkaline earth and alkali earth oxides, and possesses other properties such as physical and thermal properties that are compatible with conventional melting, forming and other manufacturing steps. Other embodiments of the luminescent glass have a maximum water content of 0.1 wt-% and do not contain any boron. Also the luminescent glass is preferably free of water, boron oxides and nitrides. The luminescent glass can be used as a wavelength converter to produce bright white light emission when pumped by conventional commercially available blue and UV light emitting diode sources. The resultant white cold light source can be applied in lighting ranging from interior illumination, appliance indicators, displays, to outdoor high intensity lighting such as needed in automotive, aerospace, and recreational facilities.